

## REMARKS

Herein, the "Action" or "Office Action" refers to the Office Action dated April 5, 2005.

Applicant respectfully requests reconsideration and allowance of the subject application. Claims 1, 4-9, 12-24, 26-28 and 35-41 are presently pending. Claims amended herein are 1, 7, 9, 14, 18-22, 24 and 35. Claims withdrawn or cancelled herein are none. New claims added herein are none.

## Formal Objections

### Claim Objections

The Office objects to claim 14 for "lack of indentation of limitation". Applicant amends claim 14 to correct the informality.

The Office objects to claims 9, 19 and 21 for an informality involving an apparent typographical error. Applicant amends these claims to correct the informality noted by the Office.

## Substantive Claim Rejections

### Claim Rejections under §102

Claims 1, 4-9, 12-15, 18-24, 26-28 and 35-41 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,614,914 to Rhoads et al. (hereinafter, "Rhoads 914") (*Office Action* p. 3). Applicant respectfully traverses the rejection.

Serial No.: 09/614,890  
Atty Docket No.: MS1-587US  
RESPONSE TO OFFICE ACTION DATED

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atty: Kasoy C. Christie

1 Claim 1 recites a method for concealing data within a digital signal, the  
2 method comprising:

3  
4 receiving a first data pattern of discrete values which are bits of a  
5 watermark and a second data pattern of discrete values which are  
6 bits of a covert message;

7 imposing a discrete value of the second data pattern over one or  
8 more discrete values of the first data pattern to generate a third data  
9 pattern, wherein the imposing is carried out by performing a Boolean  
10 operation with a discrete value of the second data pattern and  
11 multiple discrete values of the first data pattern;

12 processing the digital signal into a series of bitframes, wherein each  
13 bitframe includes a set frames, and wherein each frame includes a  
14 set of blocks; and

15 encoding the third data pattern into the digital signal, wherein a  
16 different bit of the watermark is encoded in each frame of at least  
17 one subject bitframe, and wherein a same bit of the covert message  
18 is encoded in each frame of the subject bitframe.

19 The Office cites Rhoads 914 as describing the limitations recited in claim 1  
20 (*Office Action* p. 3, *Rhoads 914* col. 9 line 60 – col. 10 line 18, col. 11 lines 7-32,  
21 cols 16 line 45 – col. 17 line 10). Rhoads 914 describes a watermark embedder  
22 which encodes a watermark signal in a host signal to create a combined signal, and  
23 then describes that a detection component can be added to the combined signal to  
24 facilitate detection of the watermark (*Rhoads 914*, col. 9 lines 35-57, col. 11 lines  
25 33-38, and Figs. 1 and 2).

26 However, Rhoads 914 does not show or disclose processing the digital  
27 signal in the time domain into a series of bitframes, wherein each bitframe  
28 includes a set of frames, and wherein each frame includes a set of blocks, as

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atty: Kasey C. Christie

1 recited in claim 1. Further, Rhoads 914 does not show or disclose encoding the  
2 third data pattern into the digital signal, wherein a different bit of the watermark is  
3 encoded in each frame of at least one subject bitframe, and wherein a same bit of  
4 the covert message is encoded in each frame of the subject bitframe, as recited in  
5 claim 1. None of the sections cited by the Office discuss the processing and/or  
6 encoding recited in claim 1.

7 Accordingly, claim 1 is allowable over Rhoads 914 for at least this reason,  
8 and Applicant respectfully requests that the §102 rejection be withdrawn.

9 Claims 4-7 are allowable by virtue of their dependency upon claim 1.  
10 Additionally, some or all of claim 4-7 may be allowable over Rhoads 914 for  
11 independent reasons. For example:

12 Claim 7 recites "wherein the different bit of the watermark which is  
13 encoded in a respective frame of the subject bitframe, is repeated in each block of  
14 the respective frame." Rhoads 914 does not show or disclose that a different  
15 binary bit of the watermark is encoded in each frame of at least one subject  
16 bitframe, and that the different binary bit of the watermark which is encoded in a  
17 respective frame, is repeated in each block of the respective frame, as recited in  
18 claim 7. Accordingly, claim 7 is allowable over Rhoads 914 and the §102  
19 rejection should be withdrawn.

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1 Claim 9 recites a method for revealing a covert data pattern of discrete  
2 values from an encoded data pattern of discrete values in a digital signal, the  
3 method comprising:

4 receiving a digital signal being segmented into a series of bitframes  
5 which each include a set frames, the digital signal including an  
6 encoded data pattern of discrete values representing a first data  
7 pattern of discrete values which are bits of a watermark, a different  
8 bit of the watermark having been encoded in each frame of at least  
9 one subject bitframe, and a covert data pattern of discrete values  
10 which are bits of a covert message, a same bit of the covert message  
11 having been encoded in each frame of the subject bitframe.

12 As argued above in response to the rejection of claim 1, Rhoads 914 does  
13 not show or disclose receiving a digital signal segmented into a series of bitframes  
14 which each include a set of frames, as recited in claim 9. Further, Rhoads 914  
15 does not show or disclose a different binary bit of a watermark having been  
16 encoded in each frame of at least one subject bitframe, and a same binary bit of a  
17 covert message having been encoded in each frame of the subject bitframe, as  
18 recited in claim 9.

19 Accordingly, claim 9 is allowable over Rhoads 914 for at least these  
20 reasons and Applicant respectfully requests that the §102 rejection be withdrawn.

21 Claim 12 is allowable by virtue of its dependency upon claim 9.  
22 Additionally, claim 9 may be allowable over Rhoads 914 for independent reasons.  
23  
24  
25

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1        Claim 14 recites a method for encoding a watermark with a covert message  
2 into a digital audio signal, the method comprising:

3                encoding multiple binary bits of the watermark into frames of at  
4                least one subject bitframe of the digital signal, a different one of the  
5                multiple binary bits encoded into each of the frames, the multiple  
6                binary bits encoded into the digital signal in multiple states; and

7                encoding a binary bit of the covert message over all the frames of the  
8                subject bitframe of the digital signal, the binary bit of the covert  
9                message indicating a single discrete value of the covert message.

10        Rhoads 914 does not show or disclose encoding a different one of the  
11        multiple binary bits of the watermark into each of the frames of at least one  
12        subject bitframe of the digital signal, where the multiple binary bits encoded into  
13        the digital signal are in multiple states, as recited in claim 14. Further, Rhoads  
14        914 does not show or disclose encoding a binary bit of the covert message over all  
15        the frames of the subject bitframe of the digital signal, the binary bit of the covert  
16        message indicating a single discrete value of the covert message, as recited in  
17        claim 14.

18        The Office cites Rhoads 914 as describing the limitations recited in claim  
19        14 (*Office Action* p. 6, and *Rhoads 914* col. 16 line 45 – col. 17 line 20). The cited  
20        sections of Rhoads 914 are entitled “Spread Spectrum Modulation” and  
21        “Scattering the Watermark Message.” These sections describe a watermark  
22        embedder which uses a spread spectrum modulator to spread each raw bit into a  
23        number of “chips”. To spread the message bits, the modulator performs an XOR  
24        operation between the raw bit and a pseudo random binary number. The cited  
25        sections also describe that the embedder scatters each of the chips corresponding

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1 to a raw bit throughout the image block. The cited sections do not describe the  
2 encoding recited in claim 14.

3 Accordingly, claim 14 is allowable over Rhoads 914 for at least this reason  
4 and Applicant respectfully requests that the §102 rejection be withdrawn.

5 Claim 15 is allowable by virtue of its dependency upon claim 14.  
6 Additionally, claim 15 may be allowable over Rhoads 914 for independent  
7 reasons.

8  
9 Claim 18 recites a computer-readable medium having computer-executable  
10 instructions that, when executed by a computer, perform a method for concealing  
11 data within a digital signal, the method comprising:

12 receiving a first data pattern of discrete values which are bits of a  
13 watermark and a second data pattern of discrete values which are  
14 bits of a covert message;

15 imposing a discrete value of the second data pattern over one or  
16 more discrete values of the first data pattern to generate a third data  
17 pattern, wherein the imposing is carried out by performing a Boolean  
18 operation with a discrete value of the second data pattern and  
19 multiple discrete values of the first data pattern;

20 processing the digital signal into a series of bitframes, wherein each  
21 bitframe includes a set of frames, and wherein each frame includes a  
22 set of blocks; and

23 encoding the third data pattern into the digital signal, wherein a  
24 different bit of the watermark is encoded in each frame of at least  
25 one subject bitframe, and wherein a same bit of the covert message  
is encoded in each frame of the subject bitframe.

As argued above in response to the rejection of claim 1, Rhoads 914 does  
not show or disclose the recited method for concealing data within a digital signal

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1 processing. It follows that Rhoads 914 does not show or disclose a computer-  
 2 readable medium having computer-executable instructions that, when executed by  
 3 a computer, perform the method for concealing data within a digital signal, as  
 4 recited in claim 18.

5 Accordingly, claim 18 is allowable over Rhoads 914 for at least this reason  
 6 and Applicant respectfully requests that the §102 rejection be withdrawn.

7  
 8 Claim 19 recites a computer-readable medium having computer-executable  
 9 instructions that, when executed by a computer, perform a method for revealing a  
 10 covert data pattern of discrete values from an encoded data pattern of discrete  
 11 values in a digital signal, the method comprising:

12  
 13 receiving a digital signal, the digital signal being segmented into a  
 14 series of bitframes which each include a set of frames, the digital  
 15 signal having an encoded data pattern of discrete values representing  
 16 a first data pattern of discrete values which are bits of a watermark, a  
 17 different bit of the watermark having been encoded in each frame of  
 18 at least one subject bitframe, and a covert data pattern of discrete  
 19 values which are bits of a covert message, a same bit of the covert  
 20 message having been encoded in each frame of the subject bitframe;  
 21 and

22 extracting a discrete value of the covert data pattern from a plurality  
 23 of values of the encoded data pattern, wherein the extracting is  
 24 carried out by decoding a single discrete value of the covert data  
 25 pattern from the digital signal based upon a state of a multiple  
 discrete values of the encoded data pattern.

26 As argued above in response to the rejection of claim 9, Rhoads 914 does  
 27 not show or disclose the recited method for revealing a covert data pattern of  
 28 discrete values from an encoded data pattern of discrete values in a digital signal.  
 29 It follows that Rhoads 914 does not show or disclose a computer-readable medium

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1 having computer-executable instructions that, when executed by a computer,  
2 perform the method for revealing a covert data pattern of discrete values from an  
3 encoded data pattern of discrete values in a digital signal, as recited in claim 19.

4 Accordingly, claim 19 is allowable over Rhoads 914 for at least this reason  
5 and Applicant respectfully requests that the §102 rejection be withdrawn.

6  
7 Claim 20 recites an apparatus comprising:

8  
9 a covert-channel-encoder executable on the processor to:

10 receive a first data pattern of discrete values which are bits of a  
11 watermark and a second data pattern of discrete values which are  
bits of a covert message;

12 impose a discrete value of the second data pattern over one or more  
13 discrete values of the first data pattern to generate a third data  
14 pattern, wherein the imposition is carried out by performing a  
Boolean operation with a discrete value of the second data pattern  
and multiple discrete values of the first data pattern;

15 process the digital signal into a series of bitframes, wherein each  
16 bitframe includes a set of frames, and wherein each frame includes a  
set of blocks; and

17 encode the third data pattern into the digital signal, wherein a  
18 different bit of the watermark is encoded in each frame of at least  
19 one subject bitframe, and wherein a same bit of the covert message  
is encoded in each frame of the subject bitframe.

20  
21 Rhoads 914 does not show or disclose the covert-channel-encoder  
22 executable on the processor to execute the operations recited in claim 20. As  
23 argued above in response to the rejection of claim 1, Rhoads 914 does not show or  
24 disclose the operations which would be carried out by the covert-channel-encoder.  
25

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1 It follows that Rhoads 914 does not show or disclose the apparatus recited in claim  
2 20.

3 Accordingly, claim 20 is allowable over Rhoads 914 for at least this reason  
4 and Applicant respectfully requests that the §102 rejection be withdrawn.

5  
6 Claim 21 recites an apparatus comprising:

7  
8 a covert-channel-decoder executable on the processor to:

9 receive a digital signal, the digital signal being segmented into a  
10 series of bitframes which each include a set of frames, the digital  
11 signal including an encoded data pattern of discrete values  
12 representing a first data pattern of discrete values which are bits of a  
13 watermark, a different bit of the watermark having been encoded in  
14 each frame of at least one subject bitframe, and a covert data pattern  
15 of discrete values which are bits of a covert message, a same bit of  
16 the covert message having been encoded in each frame of the subject  
17 bitframe; and

18 extract a discrete value of the covert data pattern from a plurality of  
19 values of the encoded data pattern, wherein the extracting is carried  
20 out by decoding a single discrete value of the covert data pattern  
21 from the digital signal based upon a state of a multiple discrete  
22 values of the encoded data pattern.

23 Rhoads 914 does not show or disclose the covert-channel-encoder  
24 executable on the processor to execute the operations recited in claim 21. As  
25 argued above in response to the rejection of claim 9, Rhoads 914 does not show or  
disclose the operations which would be carried out by the apparatus. It follows  
that Rhoads 914 does not show or disclose the apparatus recited in claim 21.

Accordingly, claim 21 is allowable over Rhoads 914 for at least this reason  
and Applicant respectfully requests that the §102 rejection be withdrawn.

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1  
2 Claim 22 recites a data encoding system for concealing data within a digital  
3 signal, the system comprising:

4  
5 an encoder coupled to the receiver and the imposer, the encoder for  
6 inserting within the digital signal one or more values of the third  
7 data pattern which are results of the imposer's imposing a discrete  
8 value of the second data pattern over one or more values of the first  
9 data pattern, wherein a different bit of the watermark is encoded in  
10 each frame of at least one subject bitframe, and wherein a same bit  
11 of the covert message is encoded in each frame of the subject  
12 bitframe.

13  
14 Rhoads 914 does not show or disclose the data encoding system for  
15 concealing data within a digital signal, as recited in claim 22. For example, As  
16 argued above in response to the rejection of claim 1, Rhoads 914 does not show or  
17 disclose an encoder for inserting one or more values of the third data pattern  
18 within the digital signal, wherein a different bit of the watermark is encoded in  
19 each frame of a respective bitframe, and wherein a same bit of the covert message  
20 is encoded in each frame of the respective bitframe, as recited in claim 22.

21 Accordingly, claim 22 is allowable over Rhoads 914 for at least this reason  
22 and Applicant respectfully requests that the §102 rejection be withdrawn.

23 Claim 23 is allowable by virtue of its dependency upon claim 22.  
24 Additionally, claim 23 may be allowable over Rhoads 914 for independent  
25 reasons.

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1        Claim 24 recites a marked signal embodied on a computer-readable  
2 medium, the marked signal having an encoded data channel therein, wherein such  
3 encoded data channel has a covert data channel imposed therein, the marked signal  
4 generated in accordance with the following acts:

5                processing a digital signal into a series of bitframes, wherein each  
6 bitframe includes a set of frames, and wherein each frame includes a  
7 set of blocks; and

8                encoding the third data pattern into the digital signal to generate the  
9 marked signal, wherein a different bit of the watermark is encoded in  
10 each frame of at least one subject bitframe, and wherein a same bit  
11 of the covert message is encoded in each frame of the subject  
12 bitframe.

13        Rhoads 914 does not show or disclose a marked signal embodied on a  
14 computer-readable medium, the marked signal having an encoded data channel  
15 therein, wherein such encoded data channel has a covert data channel imposed  
16 therein, the marked signal generated in accordance with the following acts, as  
17 recited in claim 24. As argued above in response to the rejection of claim 1,  
18 Rhoads 914 does not show or disclose processing a digital signal into a series of  
19 bitframes, wherein each bitframe includes a set of frames, and wherein each frame  
20 includes a set of blocks, as recited in claim 24. Yet further, Rhoads 914 does not  
21 show or disclose encoding the third data pattern into the digital signal to generate  
22 the marked signal, wherein a different bit of the watermark is encoded in each  
23 frame of at least one subject bitframe, and wherein a same bit of the covert  
24 message is encoded in each frame of the subject bitframe, as recited in claim 24.

25        Accordingly, claim 24 is allowable over Rhoads 914 for at least this reason  
and Applicant respectfully requests that the §102 rejection be withdrawn

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1        Claims 26-28 are allowable by virtue of its dependency upon claim 24.  
2        Additionally, claims 26-28 may be allowable over Rhoads 914 for independent  
3        reasons.

4  
5        Claim 35 recites a method for concealing data within a digital signal, the  
6        method comprising:

7  
8            receiving a first data pattern of discrete values which are bits of a  
9            watermark and a second data pattern of discrete values which are  
10           bits of a covert message;

11           imposing a single discrete value of the second data pattern on a  
12           plurality of values of the first data pattern, wherein the imposing  
13           encodes a third data pattern into the digital signal, wherein a  
14           different bit of the watermark is encoded in each frame of at least  
15           one subject bitframe of the digital signal, and wherein a same bit of  
16           the covert message is encoded in each frame of the subject bitframe  
17           of the digital signal.

18        Rhoads 914 does not show or disclose imposing a single discrete value of  
19        the second data pattern on a plurality of values of the first data pattern, wherein the  
20        imposing encodes a third data pattern into the digital signal, wherein a different bit  
21        of the watermark is encoded in each frame of at least one subject bitframe of the  
22        digital signal, and wherein a same bit of the covert message is encoded in each  
23        frame of the subject bitframe of the digital signal, as recited in claim 35.

24        Claims 36-41 are allowable by virtue of its dependency upon claim 35.  
25        Additionally, claims 36-41 may be allowable over Rhoads 914 for independent  
26        reasons.

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**Claim Rejections under §103**

Claims 16 and 17 are rejected under 35 U.S.C. §103(a) for obviousness over Rhoads 914 in view of U.S. Patent No. 5,745,604 to Rhoads (hereinafter, "Rhoads 604") (*Office Action* p. 7). Applicant respectfully traverses the rejection.

Claim 16 recites a method for imposing a covert message into a watermark, the method comprising:

generating multiple watermarks;

assigning each of the multiple watermarks to each of the possible discrete values for at least a portion of the covert message;

selecting a watermark that corresponds to an actual discrete value of at least a specific portion of the covert message;

without encoding any portion of the covert message itself into a digital signal, encoding the selected watermark into the digital signal.

Rhoads 914 and/or Rhoads 604 do not teach or suggest the combination of features recited in claim 16. Specifically, the Rhoads-Rhoads combination does not disclose "without encoding any portion of the covert message itself into a digital signal, encoding the selected watermark into the digital signal", as recited in claim 16.

Accordingly, claim 16 is allowable over the proposed Rhoads-Rhoads combination for at least this reason and Applicant respectfully requests that the §103 rejection be withdrawn.

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att: Kasey C. Christie

1 Claim 17 is allowable by virtue of its dependency upon claim 16.  
2 Additionally, claim 17 may be allowable over the Rhoads-Rhoads combination for  
3 independent reasons.

#### 4 Dependent Claims

5  
6 In addition to its own merits, each dependent claim is allowable for the  
7 same reasons that its base claim is allowable. Applicant submits that the Office  
8 withdraw the rejection of each dependent claim where its base claim is allowable.

#### 9 Conclusion

10  
11 All pending claims are in condition for allowance. Applicant respectfully  
12 requests reconsideration and prompt issuance of the application. If any issues  
13 remain that prevent issuance of this application, the Office is urged to contact the  
14 undersigned attorney before issuing a subsequent Action.

15 Respectfully Submitted,

16  
17  
18 Dated: 8-5-05

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